Height of preorbital	6
Eye—Diameter	7
Distance from snout	11
Dorsal—Distance from snout	32
Length to base of last spine	31
" of soft portion	21
Anal—Distance from snout	53
Length	13
Length of 1st spine	8
Length of 2d spine	12
Caudal—Length of middle ray	19
" outermost rays	19
Pectoral—Length of 2d and 3d simple rays	23
" 4th simple ray	21
Ventral—Length of 1st ray	17
" spine	$10\frac{1}{2}$

A single specimen of this species, in very fine condition, is contained in the Smithsonian museum, and was obtained at Honolulu (Sandwich Islands), by the Rev. W. H. Pease. It differs from the other species chiefly in color and the size of the scales, resembling in the last respect the *Cirrhitus maculatus*. It is nearly related to that species, but differs not only in color, but in the smooth palatine bones, and would consequently be placed in a different genus by Bleeker and Günther.

On the limits and arrangement of the Family of SCOMBROIDS.

BY THEODORE GILL.

The family of Scombroidæ, as established by Cuvier, was a very heterogenous group, containing many dissimilar forms which certainly cannot, in the present state of our knowledge, be characterized or distinguished by any decisive diagnosis, nor is one of the characters given by Cuvier himself either peculiar to his family or applicable to all its constituents. Various attempts have been made to distribute the species referred to the Cuvieran family among natural groups. The most recent of these, and the most valuable on account of the knowledge of the authors, are those of Drs. Bleeker and Günther. Neither of those naturalists appear to have been successful in giving an entirely natural arrangement of the family. Dr. Bleeker has not characterized his groups. Dr. Günther has distinguished his by the number of vertebræ and the comparative extent of the dorsal fins. The following arrangement is a sketch of one which it is proposed to shortly publish in more detail. The family thus established comprises parts of Dr. Günther's Trichiuridæ and Scomberidæ, as the characters given to the former are equally applicable to some of the genera of the latter.

Family SCOMBROIDÆ (Cuv.)

A. Body fusiform and moderately elongated. First dorsal with less than 25 spines.

B. Spinous dorsal abbreviated and widely separated from the soft. Pectorals at the horizon of the eyes.....SCOMBRINÆ.

a. Teeth on the palatine arcade.....Scomber.

b. No teeth on the palate.....Auxis.

BB. Spinous dorsal contiguous to the soft, variable. Pectorals equidistant from the back and breast, or nearer the latter.....ORYCNINÆ.

C. Tail with cutaneous keel on each side.

D. Dorsal spines not more than 22.
a. Vomer unarmed.
a1. Dorsal and anal finlets 6. Corslet not scaly. First dorsal XIV.....Gymnosarda.
a2. Dorsal finlets 8—9. Anal 7—9.
Corslet with very small scales. D. XI.—XIII.....Orycnopsis.
Corslet with larger scales. D. XVIII.—XXII.....Sarda.
aa. Vomer and palatines dentigerous.
b. Teeth of jaws rather small. Corslet on the sides before formed by larger scales. D. XII.—XV.
Lateral line simple.....Orycnus.
Lateral line double.....Grammatorycnus.
bb. Teeth of jaws strong. Corslet obsolete and body generally partly naked.
Teeth compressed, nearly equal in each jaw. Dorsal and anal finlets similar, 7—10. D. XIV.—XVI. (XX.).....Cybium.
Teeth conic, much larger in the lower. Dorsal and anal finlets 4—5. D. XII...Lepidocybium.
Teeth conic, subequal. Dorsal and anal finlets 8—9. D. XV.—XVIII.....Apodontis.
DD. Dorsal spines 25,.....Acanthocybium.

CC. Tail not keeled.
a. Ventrals I. 5.
a1. Dorsal and anal finlets developed.
1. Lateral line present.
Dorsal and anal finlets 6. Lateral line abruptly decurved behind the last spines.....Thyrsites.
Dorsal finlets 5; anal 4. Lateral line nearly straight.....Thyrsitops.
2. Lateral line obsolete. Skin with spinigerous or stellate tubercles.....Ruvettus.
a2. Dorsal and anal fins undivided.....Epinnula.
aa. Ventrals represented chiefly by the spines.
Preoperculum unarmed. Dorsal and anal finlets 2.....Prometheus.
Preoperculum spinigerous at its angle. Dorsal and anal finlets none.....Dicrotus.

AA. Body very long, (height much less than a tenth of the length.) First dorsal with numerous spines.....GEMPYLINÆ.
Spinous dorsal XXX., XXXI. Ventrals minute, I. 5.....Gempylus.

The types of the respective genera are the following:

SCOMBRINÆ (Bon.) Sw.

1. Scomber (*L.*) Scomber scombrus *L.*
2. Auxis (*Cuv.*) Scomber Rochei *Risso.*

ORYCNINÆ Gill.

3. Orycnus (*Cuv.*) Scomber alatunga *L.* S. thynnus *L.*
4. Grammatorycnus (*Gill.*) Thynnus bilineatus *Rüppell.*
5. Gymnosarda (*Gill.*) Thynnus unicolor *Rüppell.*

6. Orycnopsis (*Gill.*) Scomber unicolor *Geoffroy.*
7. Sarda (*Cuv.* 1829.) Scomber pelamys *Brünnich.*
8. Cybium (*Cuv.*) Scomber commersonii *Lacépède.*
9. Lepidocybium (*Gill.*) Cybium flavobrunneum *Smith.*
10. Apodontis (*Bennett.*) Apolectus immunis *Bennett.*
11. Acanthocybium (*Gill.*) Cybium sara *Bennett.*
12. Thyrsites (*Cuv.*) Scomber atun *Euphrasen.*
13. Thrysitops (*Gill.*) Thyrsites lepidopoides *Cuv. et Val.*
14. Ruvettus (*Cocco.*) Ruvettus pretiosus *Cocco.*
15. Epinnula (*Poey.*) Epinnula magistralis *Poey.*
16. Prometheus (*Lowe.*) Gempylus prometheus *Cuv. et Val.*
17. Dicrotus (*Günther.*) Dicrotus armatus *Günther.*

GEMPYLINÆ Gill.

18. Gempylus (*Cuv.* 1829) Gempylus serpens *Cuv.*

Thus limited, the family Scombroidæ appears to be a very natural one. The *Lepituroidæ* appear to be represented by four genera:

1. Lepturus (*Artedi.*) Trichiurus lepturus *Linn.*
2. Eupleurogrammus (*Gill.*) Trichiurus muticus *Gray.*
3. Lepidopus (*Gouan.*)
4. Aphanopus (*Lowe.*)

The other genera included in the family of Scombroids by Dr. Günther may be variously distributed.

Naucrates Raf., *Cubiceps* Lowe, *Neptomenus* Gthr., *Platystethus* Gthr. and possibly *Elacate* Cuv., appear to belong to the family of Carangoids.

Echeneis (L.) is the representative of a peculiar family.

Gasteroschisma Rich. and *Nomeus* Cuv. we also believe to represent a distinct family.

Ditrema (Temm. et Schlegel) belongs to the family of Embiotocoids, as has been shown by Mr. Brevoort, and is very closely allied to *Embiotoca* and *Phanerodon furcatus.*

The group of Cyttina is equivalent to the family of Zenoidæ *Lowe*, and is well entitled to rank as such. It is divisible into two subfamilies and five genera:

ZEINÆ (Bon.)

1. Zeus (*Artedi.*) Zeus faber *Linn.*
2. Zenopsis (*Gill.*) Zeus nebulosus *Temm. et Schlegel.*
3. Cyttus (*Günther.*) Capros australis *Richardson.*
4. Cyttopsis (*Gill.*) Zeus roseus *Lowe.*

OREOSOMATINÆ.

5. Oreosoma (*Cuv. et Val.*) Oreosoma atlanticum *Cuv.*

Zenopsis is distinguished by the presence of osseous plates at the base of the dorsal, and of three anal spines, &c. The *Zeus ocellatus* of Storer is a member. The genus *Cyttopsis* has no plates at the bases of the fins, but several intervene between the ventral fins and the anus, and each ventral has a spine and eight branched rays.

The Stromateina appear to be entitled to family rank as much as the Carangoids. The genera are the following:

1. Stromateus (*Artedi.*) Stromateus fiatola *L.*
2. Chondroplites (*Gill.*) Stromateus atous *Cuv. et Val.*
3. Stromateoides (*Bleeker.*) Stromateus cinereus *Bloch.*
4. Apolectus (*Cuv. et Val.*) Stromateus niger *Bloch.*
5. Peprilus (*Cuv.*) Sternoptyx Gardenii (*Bloch*) *Schneider.*
6. Poronotus (*Gill.*) Stromateus triacanthus *Peck.*

Nearly allied to the preceding are the Centrolophinæ, with the genera *Centrolophus* Lac., *Leirus* Lowe and *Palinurichthys* Gill, Blkr., (=*Pammelas* Gthr.) Closely connected to the Centrolophinæ are the genera *Schedophilus* Cocco and *Hoplocoryphis* Gill, (type *Schedophilus maculatus* Gthr.)

Brama and *Taractes* appear to belong to a peculiar family.

Pteraclis Gronovius and *Pterocombus* Frics, the latter of which has been overlooked by Dr. Günther, seem to constitute a distinct group.

Diana Risso and *Luvarus* Raf. (=*Ausonia* Risso) probably also constitute a distinct family, as well as Lampris *Retzius*. Mene is more related to *Equula*.

Coryphæna is the type of a peculiar family early established. The genus *Lampugus* is probably, as Bonaparte and Günther have believed, identical with it. Valenciennes has announced* a discovery of M. Dussumier proving that the interparietal crest of the male is much more elevated than that of the female, while Dr. Günther considers the elevation of the crest as the accompaniment of mature age.

Several forms referred by Dr. Günther to his family of Carangidæ should be also withdrawn. They are *Pammelas* Gthr., which is nearly allied to *Centrolophus*, *Psettus* Com., *Platax* Cuv. et Val., *Zanclus* Com., *Capros* L., *Antigonia* Lowe, *Equula* Cuv. and *Gazza* Rüppell, as well as the group Kurtina.

Capros and *Antigonia* form a family already established by Mr. Lowe; to it also belongs the genus *Hypsinotus* (Temm. et Schlegel), included by Günther in the group of Chætodontina and family of Chætodontidæ.

Equula and *Gazza* represent another peculiar family (Equuloidæ *Blkr.*); the *Equula longimanus* of Cantor, is the type of a distinct genus (*Clara* Gill), distinguished by the composition of the fins (D. X. 15. A. IV. 13), the large scales, entire preoperculum and long pectorals.

It is, perhaps, also somewhat doubtful whether *Psenes* (Cuv. et Val.) belongs to the Carangoids, but it would be premature to separate them until better known. The *Trachinotus anomalus* of Temminck and Schlegel referred to *Psenes* differs by the presence of seven branchiostegal rays and of only six dorsal spines; it may be called *Psenopsis anomalus*. The genus has a superficial resemblance to *Crius* or *Palinurichthys*.

Descriptions of new species of ALEPIDOSAUROIDÆ.

BY THEODORE GILL.

In this paper are described two new species of the family of Alepidosauroids, both of which are found in the waters of Western North America, and a third from the Carribean Sea is indicated. They all belong to that subgenus or genus whose members have a spine and twelve branched rays in each of the ventral fins, and of which the only other known species has been very recently described by M. Poey in his "Memorias Sobra la Historia Natural de la Isla de Cuba." The three species appear to agree in all other respects with *Alepidosaurus*, and have the same elevated dorsal fin.

The family of Alepidosauroidæ, including the species now described, appears to include seven species, but they require to be critically examined and redescribed, as the descriptions hitherto published are not sufficiently characteristic to establish their distinction. Two (*Alepidosaurus ferox* Lowe and *A. azureus* Val.) are inhabitants of Madeira, while a third (*A. Richardsonii* Blkr.) is found at New Zealand.

The family of Alepidosauroids still appears to me to be more nearly allied to the Lepturoidæ than Siluroidæ, as has been urged by Mr. Lowe, with whom Sir John Richardson, and perhaps Parnell alone of all the native naturalists of Britain, can well contest the palm of excellence as a scientific

* Cuv. et Val. Hist, Nat. des Poissons, tome xxi. p. 8.